

# Monthly Marine Biotoxin Report

April 2010

Technical Report No. 10-07

## INTRODUCTION:

This report provides a summary of biotoxin activity for the month of April, 2010. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

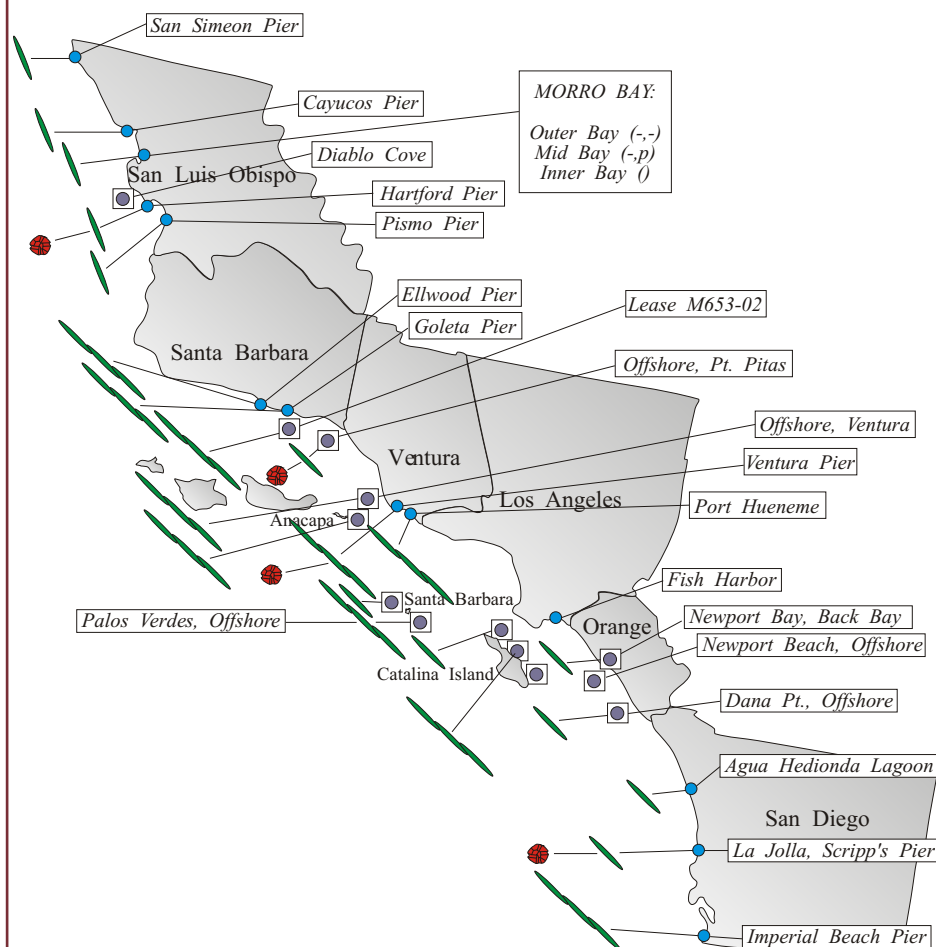
## Southern California Summary:

### Paralytic Shellfish Poisoning

*Alexandrium* was observed at several sampling locations during April (Figure 1). Low numbers of this dinoflagellate were detected at sites in San Luis Obispo, Ventura, and San Diego counties. This represents a slight

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during April, 2010.



## Relative Abundance of Known Toxin Producers

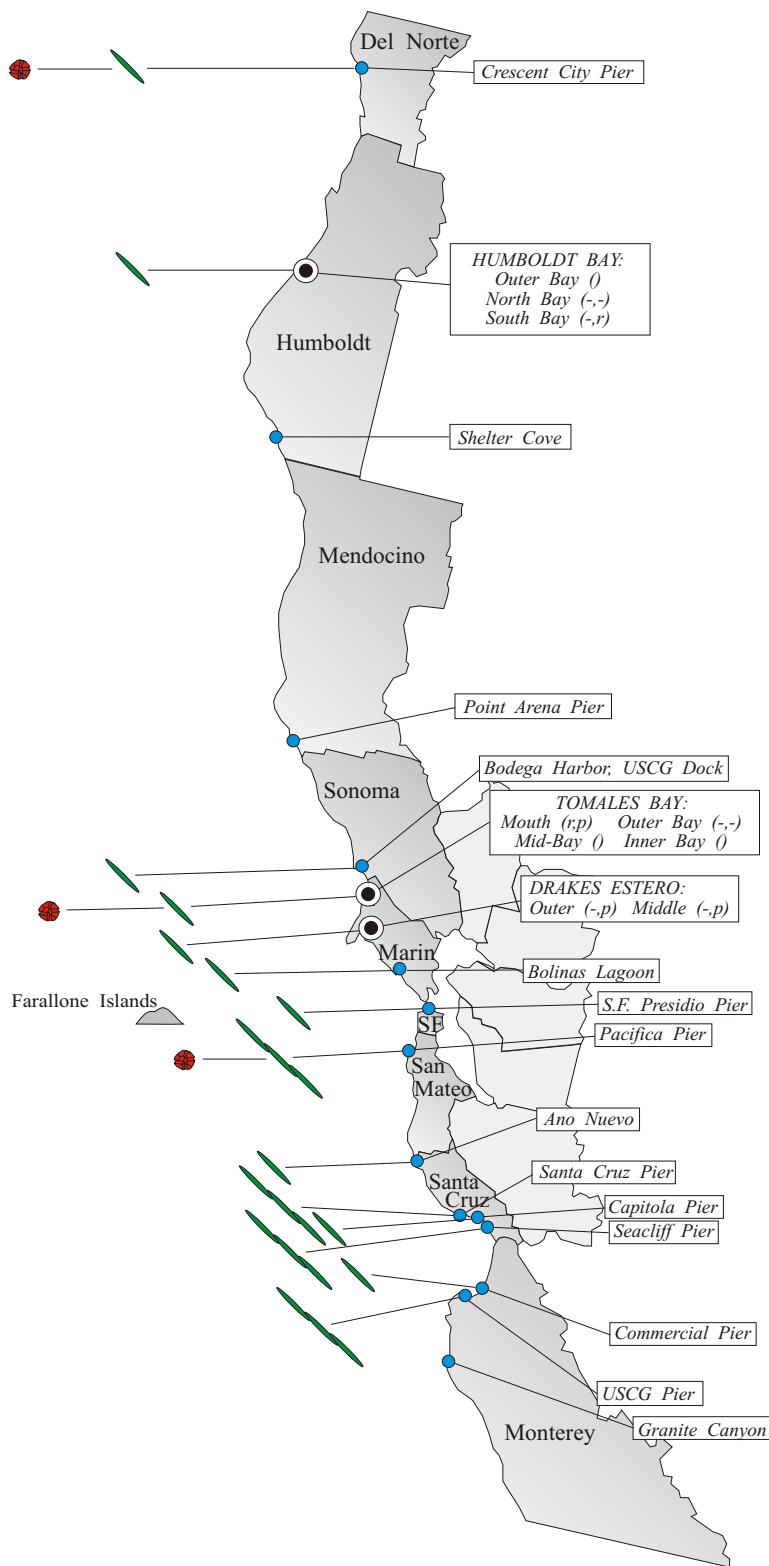
Alexandrium Species		Pseudo-nitzschia Species	
	Rare (less than 1%)		Present (less than 10%)
	Present (between 1% and 10%)		Common (between 10% and 50%)
	Common (between 10% and 50%)		Abundant (greater than 50%)
	Abundant (greater than 50%)		

## MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:  
(a,p) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.  
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during April, 2010.



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increase in this dinoflagellate compared to observations in March. PSP toxins were not detected in any shellfish samples collected during the month (Figure 3).

### Domoic Acid

*Pseudo-nitzschia* was detected along the entire southern California coast during April (Figure 1). The relative abundance and distribution of this diatom in April was very similar to observations in March, although there appeared to be an increase in cell numbers at the Imperial Beach site. As observed in March, the highest relative abundances of *Pseudo-nitzschia* were observed at Imperial Beach Pier (San Diego County) and offshore of Palos Verdes. There was a mix of the toxic and nontoxic species at most sites. The latter complex was the most common at sites offshore of Santa Barbara and Los Angeles counties. Domoic acid was not detected in any shellfish samples during the month (Figure 3).

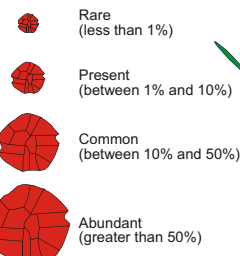
### Non-toxic Species

Diatoms dominated the assemblage along almost the entire southern California coast. *Chaetoceros* was the dominant diatom, with several other species abundant at specific sites. For example, *Lauderia* was abundant at two sites in Santa Barbara at the end of the month and *Asterionella* was abundant in

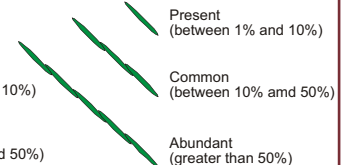
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#### Relative Abundance of Known Toxin Producers

##### Alexandrium Species



##### Pseudo-nitzschia Species



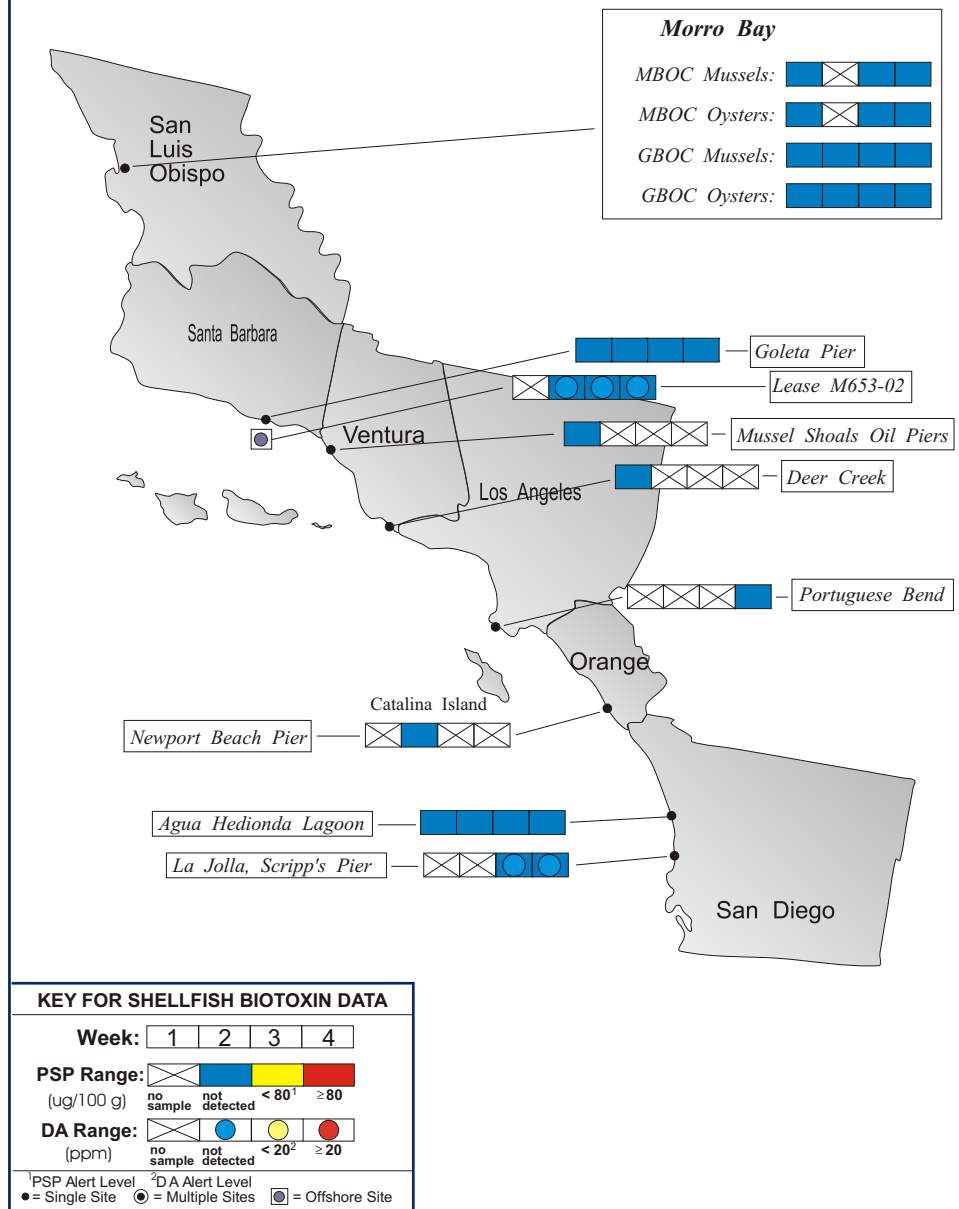
#### MONTHLY SAMPLING STATIONS:

- Single Sampling Station
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- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:

(A,P) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.  
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 3. Distribution of shellfish biotoxins in Southern California during April, 2010.



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Long Beach harbor and in the back bay of Newport Bay. Dinoflagellates (*Lingulodinium polyedrum*, *Ceratium*, *Prorocentrum*) were common offshore of Newport Beach and along the San Diego coast.

#### Northern California Summary:

##### Paralytic Shellfish Poisoning

*Alexandrium* was observed at three sampling locations during April (Figure 2). Low numbers of *Alexandrium* were observed at Crescent City (Del Norte County), the entrance to Tomales Bay (Marin County), and at Pacifica Pier. Low concentrations of PSP toxins were detected in sentinel mussels from Humboldt Bay and Drakes Estero during the beginning of the month (Figure 4). These toxins were also detected in a mussel sample from Point St. George (Del Norte County).

##### Domoic Acid

*Pseudo-nitzschia* was observed at most sampling locations between Sonoma and Monterey counties, as well as at sites in Del Norte and Humboldt counties, during April (Figure 2). The relative abundance of this diatom increased at sites between San Mateo and Monterey counties. The highest relative abundances were observed at

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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Public Health, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide effort designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:  
(510) 412-4635

For Recorded Biotoxin Information Call:  
(800) 553-4133

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Pacifica Pier (April 20) and Seaciff Pier (April 19). Domoic acid was not detected in any shellfish samples collected in April.

### Non-toxic Species

Diatoms were dominant along the northern California coast, with *Chaetoceros* and *Thalassiosira* the most common species observed.



### QUARANTINES:

There were no quarantines or health advisories in place in April.

The annual quarantine goes into effect each year on May 1 and applies specifically to the sport-harvesting of mussels along the entire California coastline, including all bays and estuaries. Routine phytoplankton and biotoxin monitoring is maintained throughout the year. This allows the detection of unexpected increases in biotoxin activity outside of the routine quarantine period. The annual quarantine does not apply to the certified commercial shellfish growing areas in California, which are monitored intensively throughout the year. All certified shellfish growers are required to submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

Consumers of Washington clams, also known as butter clams (*Saxidomus nuttalli*), are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera

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Figure 4. Distribution of shellfish biotoxins in Northern California during April, 2010.

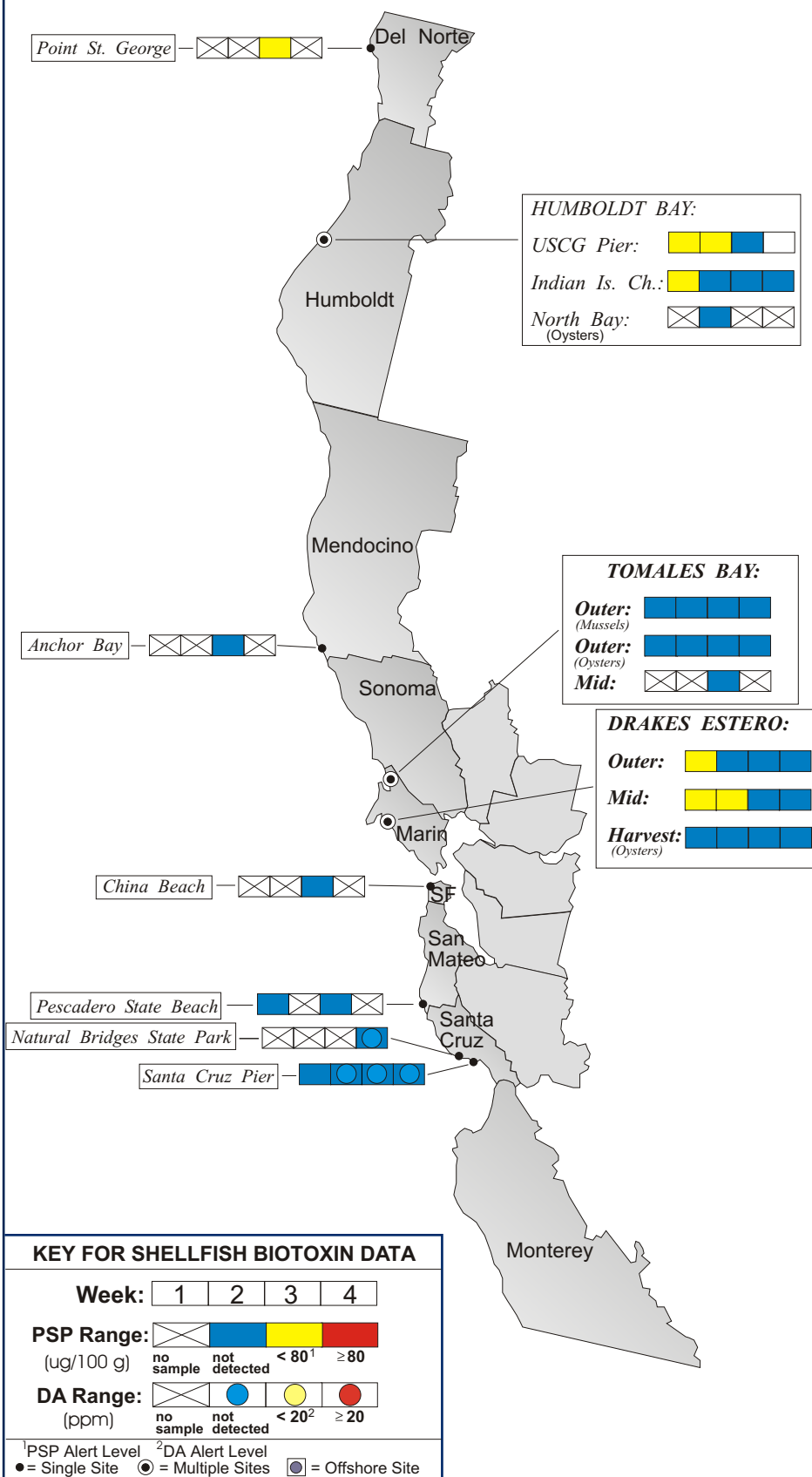


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during April, 2010.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	9
Mendocino	CDPH Volunteer ( <i>Marie De Santis</i> )	1
Sonoma	None Submitted	
Marin	Cove Mussel Company	1
	Drakes Bay Oyster Company	16
	Hog Island Oyster Company	5
	Marin Oyster Company	4
San Francisco	San Francisco County Health Department	1
San Mateo	San Mateo County Environmental Health Department	2
Santa Cruz	Santa Cruz County Environmental Health Department	1
	U.C. Santa Cruz	4
Monterey	None Submitted	
San Luis Obispo	Grassy Bar Oyster Co.	8
	Morro Bay Oyster Company	6
Santa Barbara	Santa Barbara Mariculture Company	6
	U.C. Santa Barbara	5
Ventura	Ventura County Environmental Health Department	2
Los Angeles	Los Angeles County Health Department	1
Orange	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	4
	Scripps Institute of Oceanography	2

Symptoms of domoic acid poisoning can occur within 30 minutes to 24 hours after eating toxic seafood. In mild cases, symptoms of exposure to this nerve toxin may include vomiting, diarrhea, abdominal cramps, headache and dizziness. These symptoms disappear completely within several days. In severe cases, the victim may experience excessive bronchial secretions, difficulty breathing, confusion, disorientation, cardiovascular instability, seizures, permanent loss of short-term memory, coma and death.

Any person experiencing any of these symptoms should seek immediate medical care. Consumers are also advised that neither cooking or freezing eliminates domoic acid or the PSP toxins from the shellfish tissue. These toxins may also accumulate in the viscera of other seafood species such as crab, lobster, and small finfish like sardines and anchovies, therefore these tissues should not be consumed. Sport harvesters are encouraged to contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



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and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams (*Siliqua patula*) are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat as well as in the viscera.

PSP toxins affect the human central nervous system, producing a tingling around the mouth and fingertips within a few minutes to a few hours after eating toxic shellfish. These symptoms typically are followed by disturbed balance, lack of muscular coordination, slurred speech and difficulty swallowing. In severe poisonings, complete muscular paralysis and death from asphyxiation can occur.

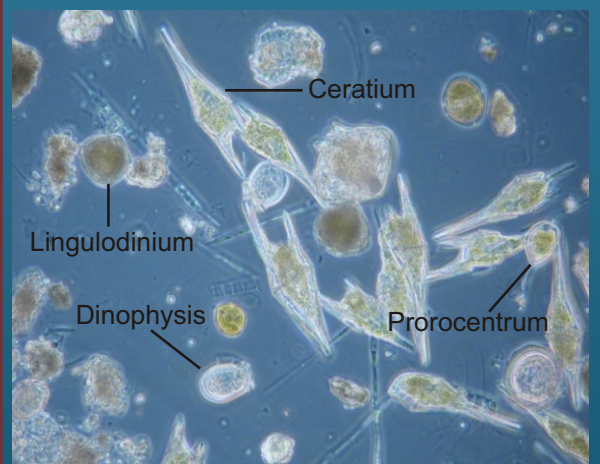
Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during April, 2010.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	4
	Bureau of Land Management	1
	Fortuna High School	2
Mendocino	CDPH Volunteer ( <i>Marie De Santis</i> )	2
Sonoma	CDPH Volunteer ( <i>Cathleen Cannon</i> )	1
Marin	CDPH Volunteer ( <i>Brent Anderson, Cal Strobel</i> )	6
	Drakes Bay Oyster Company	11
	Hog Island Oyster Company	1
San Francisco	CDPH Volunteer ( <i>E. McNaughton</i> )	2
San Mateo	San Mateo County Environmental Health Dept.	2
	The Marine Mammal Center ( <i>Stan Jensen</i> )	4
	U.C. Santa Cruz	2
Santa Cruz	Santa Cruz County Environmental Health Dept.	3
	The Marine Mammal Center ( <i>Nancy Scarborough</i> )	2
	U.C. Santa Cruz	4
Monterey	Friends of the Sea Otter ( <i>Aya Obara</i> )	1
	Monterey Abalone Company	3
	Marine Pollution Studies Laboratory	1
San Luis Obispo	Friends of the Sea Otter ( <i>Kelly Cherry</i> )	4
	Morro Bay National Estuary Program	1
	Monterey Bay National Marine Sanctuary	4
	Morro Bay Oyster Company	5
	Tenera Environmental	2
Santa Barbara	The Marine Mammal Center ( <i>Tim Lytsell, P.J. Webb</i> )	5
	CDPH Volunteer ( <i>Sylvia Short</i> )	4
	Channel Islands National Marine Sanctuary	1
	National Park Service	1
	Santa Barbara Mariculture Company	3
Ventura	U.C. Santa Barbara	5
	CDPH Volunteer ( <i>Fred Burgess</i> )	3
	Channel Islands National Marine Sanctuary	1
	Guided Discoveries, Tole Mour	1
	Ventura County Environmental Health Department	1
Los Angeles	Catalina Island Marine Institute	1
	Los Angeles County Sanitation District	3
	Guided Discoveries, Tole Mour	7
	Southern California Marine Institute	1
Orange	California Department of Fish and Game	8
	Ocean Institute	1
	Orange County Health Care Agency	1
San Diego	Avian Research Associates	1
	Carlsbad Aquafarms, Inc.	1
	Scripps Institute of Oceanography	4

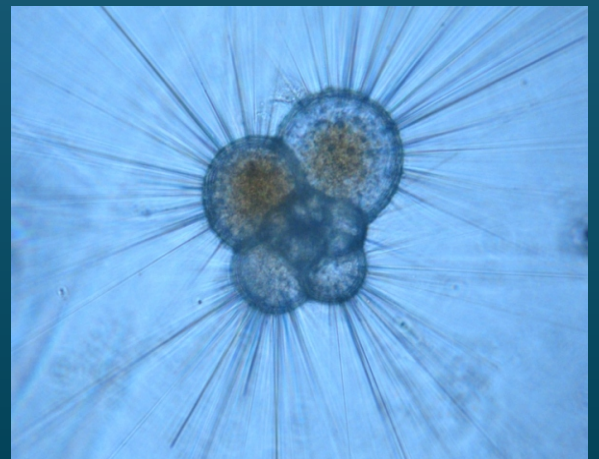
## PHYTOPLANKTON GALLERY



The diatom *Chaetoceros* was increasingly abundant along most of the California coast.



Dinoflagellates were increasingly common at sites in San Diego and offshore of Orange County.



This foraminiferan is an amoeba-like protozoan that was observed in a phytoplankton sample from Santa Barbara.